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<p><b>(54) Title:</b> ELECTRONIC MAIL MESSAGE NOTIFICATION METHOD AND APPARATUS</p> <p><b>(57) Abstract</b></p> <p>The present invention is a method and apparatus for notifying a recipient that an electronic mail (email) message addressed to the recipient has been received at an electronic mail messaging system. Responsive to an email messaging system receiving an email message addressed to a recipient, the email messaging system places an alert telephone call to the recipient. The alert telephone call indicates that the email message has been received. A notification device at the recipient's location detects the alert telephone call and indicates that the alert telephone call has been detected. The notification device comprises a detection circuit detecting an alert call placed in response to receipt of the email message and an indicator circuit indicating that the alert call has been detected. In one embodiment, the indicator circuit comprises a counter circuit counting a number of alert calls that have been detected and a display displaying the number of alert calls that have been detected.</p>			
<pre> graph TD     102[E-MAIL SENDER] -- 104 --&gt; 108[E-MAIL MESSAGING SYSTEM]     108 -- 110a --&gt; 112[PSTN]     112 -- 110b --&gt; 114[NOTIFICATION DEVICE]     114 -- 116 --&gt; 106[E-MAIL RECIPIENT]   </pre>			

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## ELECTRONIC MAIL MESSAGE NOTIFICATION METHOD AND APPARATUS

### Field of the Invention

5 The present invention relates to a system and method for notifying a recipient of an electronic mail message that the message has been received.

### Background of the Invention

Currently, a user of a consumer online service has no way of telling when there are unread electronic mail (email) messages present in the 10 user's account when the user is off-line. The user must periodically logon to the email messaging system to check for new email. The logon process may be rather lengthy, involving steps such as turning on a computer, waiting for the computer to boot, launching an application program, initiating a connection, and waiting for the connection to be made. Due to 15 the inconvenience of this process, many users logon infrequently, for example, once a day. Thus, the time it takes for an email message to be delivered to the recipient may be a day or more. This delay tends to diminish the usefulness of email and make it less likely that email will be used when a quicker response is desired.

20 A need arises for a technique by which the email message delivery delay time may be reduced. Such a reduction would result if a user was

notified of new email message soon after the message was received by the email messaging system. A need arises for a technique by which users of email messaging are notified of a new email message soon after the message is received by the email messaging system.

## 5      **Summary of the Invention**

The present invention is a method and apparatus for notifying a recipient that an electronic mail (email) message addressed to the recipient has been received at an electronic mail messaging system. The invention provides a simple and inexpensive way of notifying the recipient when 10 they should logon to retrieve an email message.

Responsive to an email messaging system receiving an email message addressed to a recipient, the email messaging system places an alert telephone call to the recipient. The alert telephone call indicates that the email message has been received. A notification device at the 15 recipient's location detects the alert telephone call and indicates that the alert telephone call has been detected.

The notification device comprises a detection circuit detecting an alert call placed in response to receipt of the email message and an indicator circuit indicating that the alert call has been detected. In one 20 embodiment, the indicator circuit comprises a counter circuit counting a

number of alert calls that have been detected and a display displaying the number of alert calls that have been detected.

### **Brief Description of the Drawings**

The details of the present invention, both as to its structure and 5 operation, can best be understood by referring to the accompanying drawings, in which like reference numbers and designations refer to like elements.

Fig. 1 is a block diagram of a system including an email notification device 116, according to the present invention.

10 Fig. 2 is a block diagram of one embodiment of a notification device 116, according to the present invention.

Fig. 3a is a block diagram of a typical email recipient system configuration including a notification device, according to the present invention.

15 Fig. 3b is a block diagram of another typical email recipient system configuration including a notification device, according to the present invention.

Fig. 4a is a block diagram of an exemplary system, in which an automated notification process, according to the present invention, may be 20 implemented.

Fig. 4b is a flow diagram of an email notification process 450, implemented in the system of Fig. 4a.

### **Detailed Description of the Invention**

An electronic mail (email) notification device 116 of the present invention, and the system in which it operates, is shown in Fig. 1. An email sender 102 transmits an email message 104, which is addressed to email recipient 106, to email messaging system 108. The email message may be sent over any conventional transmission medium, such as a local or wide area network, or the Internet. The email messaging system places 10 the received email message in the inbox of the account belonging to email recipient 106.

After the email sender 102 transmits the email message, he may then place an alert telephone call 110a to email recipient 106 at a designated telephone number using the public switched telephone network 15 (PSTN) 112. Alternatively, after the email message has been placed in the inbox, the email messaging system 108 may place an alert telephone call 110b to email recipient 106 at the designated telephone number using the PSTN 112. The PSTN 112 completes the alert call to the telephone line 114 corresponding to the designated telephone number. Notification 20 device 116 is connected to telephone line 114 and detects the ring signal of the alert call. Email sender 102 or email messaging system 108 allows the

call to ring a predetermined number of times, then terminates the call. Notification device 116 detects the call and determines that it is an alert call based on the number of rings. Notification device 116 then generates an indication 118 that an alert call has been detected for email recipient 5 106, thus notifying recipient 106 that an email message has arrived.

A block diagram of one embodiment of a notification device 116, according to the present invention, is shown in Fig. 2. Notification device 116 detects each alert call which comes in on line 114, which is a standard telephone line. Notification device 116 includes a well-known telephone 10 ring detector circuit 204, which is connected to telephone line 114. Ring detector 204 outputs a signal 206 that indicates that line 114 is ringing. Signal 206 is input to counter/comparator 208, which counts each ring on line 114. Once the call is detected to have terminated, such as by no ring detected for an interval of five seconds, counter/comparator 208 compares 15 the number of rings counted with a predefined target number of rings. When the number of rings equals, but does not exceed the predefined target number, counter/comparator 208 outputs signal 210, which indicates that an alert call has been received. This allows notification device 116 to distinguish alert calls from other types of calls that may come in on line 20 114. For example, the target number of rings may be set to one. When a call comes in on line 114, ring detector 204 will detect each ring. After the

first ring, counter comparator 208 will detect that the target number of rings has been reached. If the call is not an alert call, line 114 will continue ringing. Counter/comparator 208 will detect that the preset number of rings has been exceeded and will not output signal 210. If the 5 call is an alert call, the call will terminate, counter/comparator 208 will detect that the preset number of rings has not been exceeded, and will output signal 210, which indicates that an alert call has been detected.

Signal 210 is input to counter circuit 212, which counts the number of alert calls that have been received on line 204. Counter circuit 212 10 outputs a signal 214 to indicator 216 indicating the current count of alert calls. Indicator 216 displays the number of alert calls. When an alert call 110a or 110b, as shown in Fig. 1, which indicates that an email message is waiting, is received, the notification device indicates that the email message is waiting to the email recipient. After being notified, the 15 recipient may reset the count of alert calls using reset device 218, which is typically a button or switch. Thus, counter 212 counts alert calls that have arrived since the last reset.

In another embodiment of the notification device, counter 212 is replaced by a simple latching device, which latches signal 210. This 20 embodiment indicates only that one or more alert calls have been received, thus notifying that one or more email messages are waiting. The number

of alert calls is not displayed. The recipient may reset the notification device using reset device 218.

Indicator 216 may be a visual display device or an audible indicator. In an embodiment in which the number of messages is displayed, the visual display device may be, for example, an alphanumeric display device that directly displays the number of alert calls or a flashing light indicating the number of alert calls by its flashing pattern. In such an embodiment, an audible indicator may be a simple beeper, indicating the number of alert calls by its beeping pattern, or the audible indicator may be a speech synthesis device generating a spoken message indicating the number of alert calls waiting. Visual and audible indicators may both be present in one notification device.

Notification device 116 may be advantageously installed on any telephone line used by the email recipient. A typical configuration is shown in Fig. 3a. In this configuration, the recipient has a separate dedicated telephone line that is used to access the email messaging system. The typical email recipient has a computer system 302, which is often a standard personal computer. The typical email recipient also has a conventional modem 304, which is used to logon to the email messaging system in order to transmit and receive email messages. Both modem 304 and notification device 116 are connected to telephone line 114.

Notification device 116 may include a conventional telephone line pass-through circuit, to allow convenient connection of the device to the telephone line and the modem. Generally, a typical email user initiates telephone calls to the email messaging system.

5 Another typical configuration is shown in Fig. 3b. In this configuration, the email recipient uses a single telephone line that is shared among several devices. For example, in addition to notification device 116 and modem 304, a telephone set 306 and one or more additional telephone devices 308, such as a telephone answering machine, a fax 10 machine, etc., are connected as well. Many of these devices include pass-through circuits, to facilitate connection of additional devices. Notification device 116 may be advantageously used in this configuration as long as the target number of rings is properly set to correspond to the number of rings of an alert call. As an example, in a typical configuration, 15 notification device 116 is set to respond to the number of rings of an alert call, for example, one ring, and device 308 may be set to respond to four rings. An incoming call, regardless of type, will ring on line 114. If the call is an alert call, the call will ring once and then terminate. Notification device 116 will detect the alert call and indicate that an email message is 20 waiting. Device 308 will not respond to the call. If the call is not an alert call, the call will ring on line 114 more than once. Notification device 116

will detect this situation and will not register the call as an alert call. As the call continues ringing, any person present may answer the call with telephone station 306, or after four rings, device 308 will respond by answering the call.

5 An exemplary system, in which an automated notification process, according to the present invention, may be implemented, is shown in Fig. 4a. The system of Fig. 4a includes an email messaging system 402, public switched telephone network (PSTN) 404 and an email recipient system 406. Email messaging system 402 includes an email server 408 and a 10 telephone dialer device 411. Email recipient system 406 typically includes notification device 116, modem 414 and computer system 416. Email server 408 is a conventional online server system with multiple user account email capability. Email server 408 may include only one server computer system, or it may include multiple, networked computer systems 15 present at one location or at several geographically separate locations. Email server 408 includes email messages 409 and telephone numbers 410, both of which are typically stored in one or more mass storage devices, such as hard disk drives.

Dialer device 411 is connected to email server 408 and to PSTN 20 404. Device 411 receives commands and data from server 408 and transmits status and data to server 408. Device 411 is capable of initiating

telephone calls over PSTN 404 to telephone numbers received from server 408. When an email message is received by email server 408, the message is stored in email server 408 at block 409. Email server 408 then selects the telephone number corresponding to the recipient of the email message 5 from among telephone numbers 410 and transmits the selected telephone number, along with commands, to dialer device 411. A conventional modem with outdialing capability may be used as dialer device 411. However, since alert calls are terminated before connection occurs, full modem capability is not required. Thus, less expensive dial-only devices 10 may be used as dialer device 411.

An email notification process 450, implemented in the system of Fig. 4a, is shown in Fig. 4b. The process begins with step 451, in which email messaging system 402 receives an email message addressed to an email recipient registered with email messaging system 402, such as the 15 recipient at email recipient system 406. In step 452, email messaging system 402 places the received email message in the inbox corresponding to the email recipient. Typically, this inbox resides on email server 408. In step 453, email messaging system 402 places an alert call to a telephone line that has been designated by the email recipient. The alert call is 20 allowed to ring a predetermined number of times, then is terminated. In step 454, notification device 116 detects the alert call and indicates to the

email recipient that the email message is waiting. Steps 455 and 456 may be performed at the option of the recipient. In optional step 455, the email recipient may reset notification device 116. In optional step 456, the email recipient may retrieve the waiting email using system 406. The timing of 5 the performance of steps 455 and 456, or whether the steps are performed at all, is at the option of the recipient.

Although specific embodiments of the present invention have been described, it will be understood by those of skill in the art that there are other embodiments that are equivalent to the described embodiments.

10 Accordingly, it is to be understood that the invention is not to be limited by the specific illustrated embodiments, but only by the scope of the appended claims.

**What is claimed is:**

1. A method of notifying a recipient that an electronic mail message addressed to the recipient has been received at an electronic mail messaging system, comprising the steps of:
  - receiving an alert telephone call indicating that the electronic mail message has been received at the electronic mail messaging system;
  - detecting the alert telephone call; and
  - indicating that the alert telephone call has been detected.
2. The method of claim 1, wherein the step of detecting the alert telephone call comprises the steps of:
  - 10 detecting each ring of the telephone call; and
  - determining whether the telephone call is an alert call based on a number of rings of the telephone call.
3. The method of claim 1, wherein the step of indicating that the alert telephone call has been detected comprises the steps of:
  - 15 counting a number of alert calls that have been detected; and
  - displaying the number of alert calls that have been detected.
4. The method of claim 3, wherein the step of detecting the alert telephone call comprises the steps of:
  - detecting each ring of the telephone call; and

determining whether the telephone call is an alert call based on a number of rings of the telephone call.

5. The method of claim 3, wherein the step of indicating that the alert telephone call has been detected further comprises the step of:

5 resetting the count of the number of alert calls that have been detected.

6. The method of claim 1, further comprising the step of:  
resetting the indication that the alert telephone call has been detected.

10 7. The method of claim 1, wherein the alert telephone call is received from the electronic mail messaging system.

8. The method of claim 1, wherein the alert telephone call is received from a sender of the electronic mail message.

9. A method of notifying a recipient that an electronic mail message 15 addressed to the recipient has been received in an electronic mail messaging system, comprising the steps of:

receiving an electronic mail message addressed to the recipient;  
initiating a telephone call to a telephone number specified by the recipient; and

20 terminating the telephone call after a predetermined number of rings.

10. An apparatus for notifying a recipient that an email message addressed to the recipient has been received, comprising:

a detection circuit capable of detecting an alert call placed in response to receipt of the email message; and

5. an indicator circuit, coupled to the detection circuit, capable of indicating that the alert call has been detected.

11. The apparatus of claim 10, wherein the indicator circuit comprises:

a counter circuit, coupled to the detection circuit, capable of counting a number of alert calls that have been detected; and

10 a display, coupled to the counter circuit, capable of displaying the number of alert calls that have been detected.

12. The apparatus of claim 11, wherein the indicator circuit further comprises:

a reset device, coupled to the counter circuit, capable of resetting 15 the number of alert calls that have been detected.

13. The apparatus of claim 10, wherein the detection circuit comprises:

a ring detector, coupled to a telephone line, capable of detecting each ring of an incoming telephone call; and

20 a counter/comparator circuit, coupled to the ring detector, capable of determining whether the incoming telephone call is an alert call based on a number of rings of the incoming telephone call.

14. An email system comprising:

an email server capable of receiving an email message addressed to

a recipient; and

a dialer device, coupled to the email server, capable of placing an

5 alert telephone call to a telephone number specified by the recipient,

responsive to receipt of the email message by the email server.

15. The system of claim 14, wherein the dialer device places the alert

telephone call by:

initiating a telephone call to the telephone number specified by the

10 recipient;

waiting for the telephone call to ring a predetermined number of

times; and

terminating the telephone call.

16. A system for notifying a recipient of an email message, comprising:

15 an email system, capable of receiving the email message and

placing an alert telephone call to the recipient; and

a notification device, capable of receiving the alert call and

indicating receipt of the alert call to the recipient.

17. The system of claim 16, wherein the email system comprises:

20 an email server capable of receiving an email message addressed to

a recipient; and

a dialer device, coupled to the email server, capable of placing an alert telephone call to a telephone number specified by the recipient, responsive to receipt of the email message by the email server.

18. The system of claim 16, wherein the notification device comprises:
  - 5 a detection circuit capable of outputting a signal responsive to detecting an alert call placed in response to receipt of the email message; and an indicator circuit, coupled to the signal, capable of indicating that the alert call has been detected.
- 10 19. The system of claim 18, wherein the email system comprises:
  - an email server capable of receiving an email message addressed to a recipient; and a dialer device, coupled to the email server, capable of placing an alert telephone call to a telephone number specified by the recipient, 15 responsive to receipt of the email message by the email server.

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FIG. 1

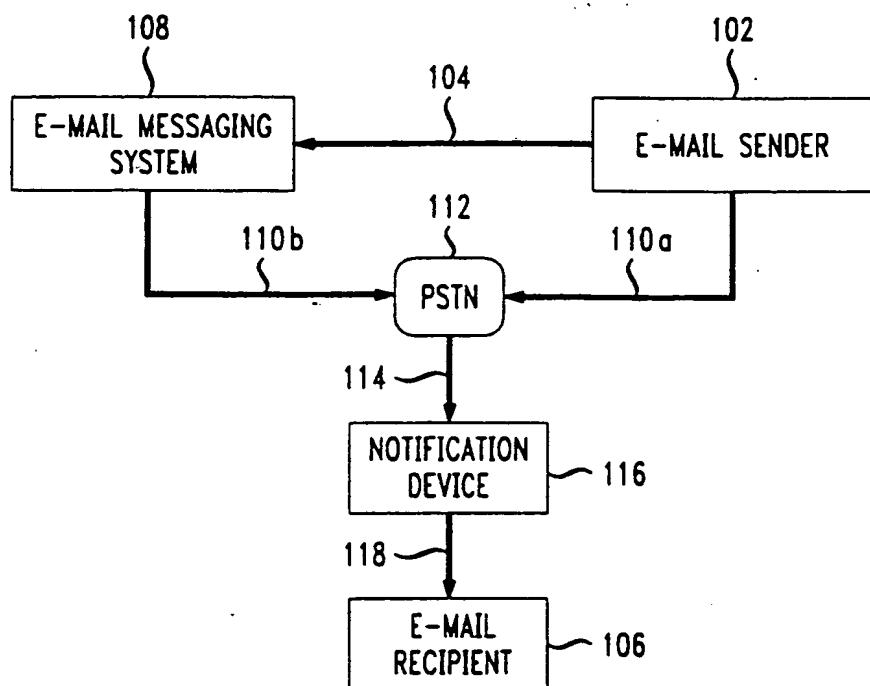
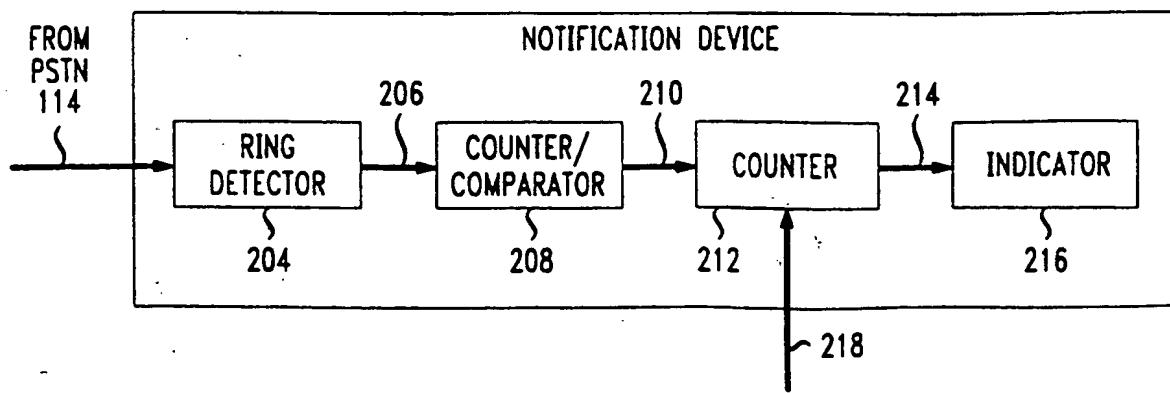


FIG. 2



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FIG. 3A

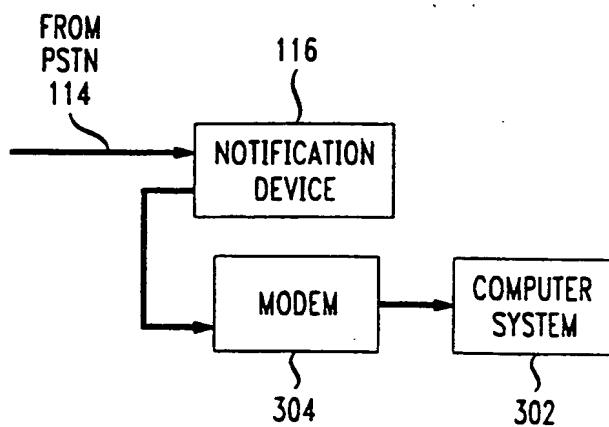


FIG. 3B

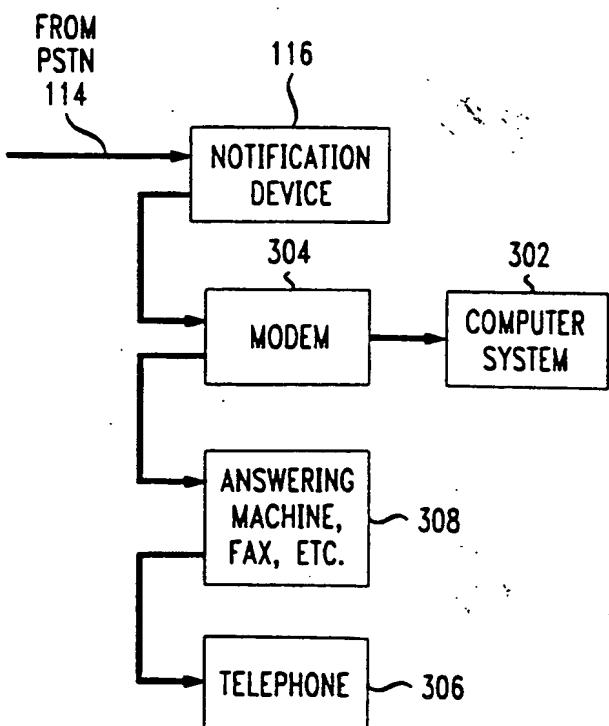


FIG. 4A

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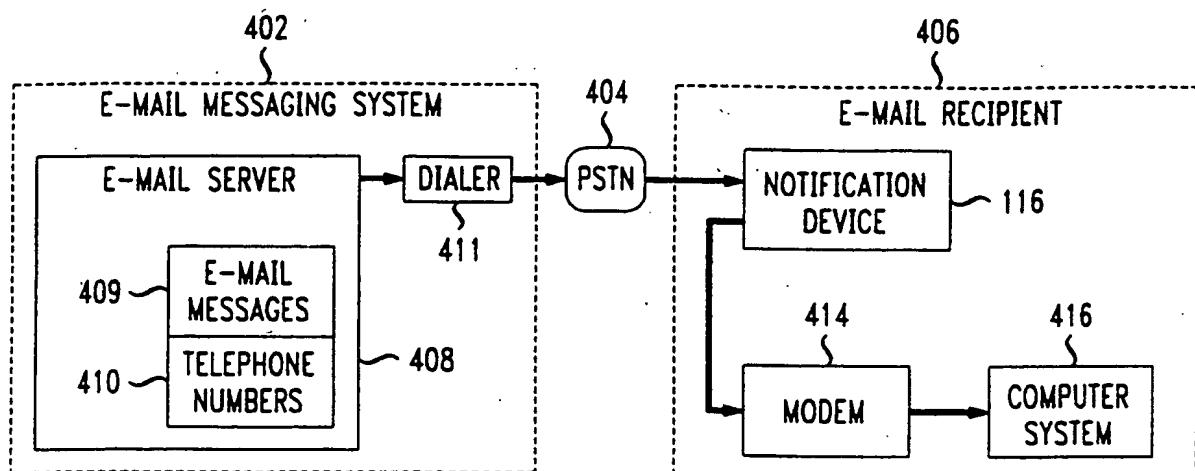
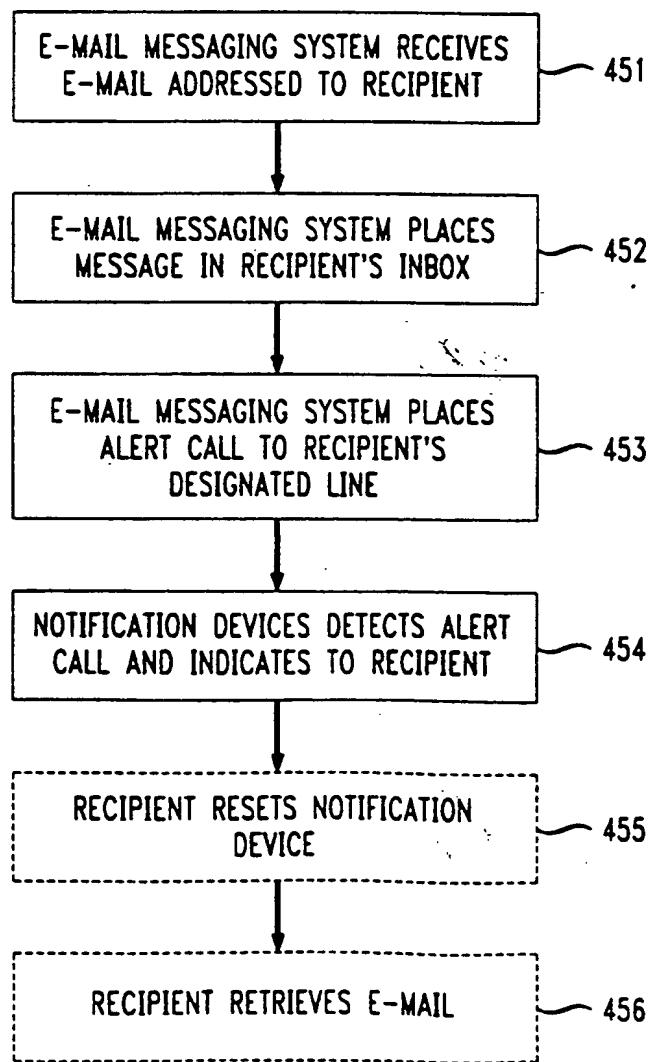


FIG. 4B



# INTERNATIONAL SEARCH REPORT

International Application No.  
PCT/US 98/13731

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 6 H04L12/58 H04M3/50

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 H04L H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 736 989 A (ROOSTER LTD) 9 October 1996	1,3,7, 9-11, 14-19
Y	see abstract  see column 2, line 48 - column 6, line 18 see column 6, line 50 - column 8, line 53 see figure 2 ---	2,4-6, 12,13
X	"NO-CONNECTION SIGNAL METHOD" IBM TECHNICAL DISCLOSURE BULLETIN, vol. 32, no. 5B, 1 October 1989, page 253 XP002078948	9,14,15
Y	see the whole document ---	2,4,13
Y	WO 95 18501 A (GTE LABORATORIES INC) 6 July 1995 see page 6, line 1 - line 15 ---	5,6,12
		-/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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Date of the actual completion of the international search

2 October 1998

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15/10/1998

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## INTERNATIONAL SEARCH REPORT

Intern. Application No.  
PCT/US 98/13731

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 508 138 A (HITACHI LTD) 14 October 1992 see abstract see column 5, line 58 - column 7, line 24 see figure 1 -----	1,7,10, 14,16-19

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

Internat'l Application No  
PCT/US 98/13731

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